

Remarks

Claims 22, 28, and 29 have been amended. Claims 12-21 and 24 has been cancelled
Claims 22 and 25-32 are pending.

Examination and reconsideration of the application as amended is requested.

§ 112 Rejections

Claims 22 and 28-32 were rejected under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art the relevant art that the inventors had possession of the claimed invention at the time the application was filed. The Patent Office submitted that the specification does not reasonably provide enablement for a fluid management system generally.

Applicants have amended claim 1 such that the fluid management system comprises a surfactant. Accordingly, the above rejection of claims 22 and 28-32 should be withdrawn.

Claims 28 and 29 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Applicants have corrected the dependency of claims 28 and 29 so they depend from claim 22. Accordingly, the above rejection of claims 28 and 29 should be withdrawn.

§ 103 Rejections

Claims 22, 25, 28, 29, and 32 were rejected under 35 USC § 103(a) as being unpatentable over Varnell (WO 99/0619), in view of Nagasaki (U.S. Patent No. 6,326,075).

Varnell discloses a composition for improved inkjet performance. The composition contains a divalent metal salt, a carrier agent, and a sizing agent and the substrate may be paper or a solid, non-porous plastic material (cast or extruded transparency films). Varnell does not disclose surfactant.

Nagasaki discloses an ink recording material wherein the support may be made from nonwoven fabric with an ink-receiving layer over the support.

Neither Varnell, nor Nagasaki, alone or in combination, teach or suggest the combination of a surfactant and a water soluble multivalent salt on a nonwoven macroporous substrate.

For at least these reasons, the combination of the disclosures of Varnell and Nagasaki as suggested by the Patent Office does not teach or suggest Applicants' invention as now claimed.

Accordingly, Applicants respectfully request that the above rejection of claims 22, 25, 28, 29, and 32 be withdrawn.

Claims 22 and 24 were rejected under 35 USC § 103(a) as being unpatentable over Sato (U.S. Patent No. 6,096,418), in view of Shaw-Klein (U.S. Patent No. 6,110,601) and TYVEK product bulletin.

Sato discloses an ink recording medium having a base material, and an ink receiving material on the base material. The ink receiving material contains a binder and fine porous polysaccharide particles exposed to the surface. The polysaccharide particles are made by crosslinking a water soluble polysaccharide with a polyvalent salt to make the resulting salt water insoluble (column 3, lines 22-33 and 53-60, and column 4, lines 7-17).

Shaw-Klein discloses an ink recording element having a water-absorbing layer and an image recording layer containing a colloidal oxide and pigment dispersed in an organic binder. Shaw-Klein further discloses that the invention may contain a small amount of calcium chloride, barium sulfate, or aluminum chloride. Shaw-Klein also discloses that non-ionic, hydrocarbon, or fluorocarbon surfactants or cationic surfactants may be used in the ink-receiving layer. TYVEK product bulletin discloses nonwoven sheet materials.

The combination of the disclosures of Sato, Shaw-Klein, and TYVEK product bulletin as suggested by the Patent Office would not result in Applicants' invention as claimed since the resulting article would contain non-soluble polyvalent salt or calcium chloride, barium sulfate, or aluminum chloride as the polyvalent salt. Applicants' polyvalent salt is water-soluble and includes only certain calcium salts and does not include barium sulfate or aluminum chloride. For at least these reasons, the combination of the above references as suggested by the Patent Office do not teach or suggest the invention as now claimed. Accordingly, Applicants respectfully request that the above rejection of claims 22 and 24 be withdrawn.

Claims 22, 24-27, 29, and 30 were rejected under 35 USC § 103(a) as being unpatentable over either Wallace (U.S. Patent No. 4,889,765) or TYVEK product bulletin, in view of Stokes (EP 842,786).

Wallace discloses an ink-receptive coating containing olefin copolymer containing neutralized pendant acid groups and a 2-oxazoline polymer and may contain a hydrophilic latex (acrylic acid/acrylonitrile/styrene terpolymers, anionic surfactant and water) and that spunbonded olefin and metal are not receptive to aqueous inks.

TYVEK product bulletin discloses nonwoven sheet materials.

Stokes discloses a print enhancement coating that may contain a polyvalent metal ion salt, cationic polymer, viscosity modifier, and a nonionic or cationic surfactant. The print enhancement coating is applied to a second layer that contains particles of thermoplastic polymer and a film forming binder that is heat-fused after printing. The second layer is placed on top of a first layer wherein the first layer may be a film, paper, nonwoven or woven web. After imaging, the second layer is heated to fuse the polymeric particles. Thus, Stokes does not disclose that its enhancement coating may be applied to a nonwoven. Stokes discloses that an enhancement coating may be placed on a second coating containing thermoplastic polymer particles and a film forming binder to reduce ink bleeding on the second layer. Stokes does not suggest that the "print enhancement" coating may be applied to any other surface, in particular, a macroporous nonwoven substrate. For at least these reasons, none of Stokes, Wallace, or TYVEK product bulletin, alone or in combination provide the requisite motivation for one skilled in the art at the time the invention was made to combine and modify the references as suggested by the Patent Office. Accordingly, Applicants respectfully request that the above rejection of claims 22, 24-27, 29, and 30 be withdrawn.

Claims 30 and 31 were rejected under 35 USC § 103(a) as being unpatentable over either Wallace or TYVEK product bulletin, in view of Stokes as applied above and further in view of Hasegawa (U.S. Patent No. 4,954,395). Wallace, TYVEK product bulletin, and Stokes have been discussed above. Hasegawa discloses a recording medium having an ink transporting layer on top of a ink fixing layer. The ink transporting layer contains at least one of a surfactant and a penetrant and an ink-fixing material and uses sodium dioctyl sulfosuccinate in Example 4. Hasegawa does not add anything substantive to the disclosure of Stokes nor provides any motivation to combine the references as suggested by the Patent Office. Accordingly, Applicants respectfully request that the above rejection of claims 30 and 31 be withdrawn.

Claims 22, 24-29, and 32 were rejected under 35 USC § 103(a) as being unpatentable over Kovacs (U.S. Patent No. 6,206,517), in view of Shaw-Klein.

Kovacs discloses an ink recording element having a support and a cross-linkable polymer of gelatin or acetylated poly(vinyl alcohol) and a mordant (image receiving layer). Kovacs discloses that multivalent inorganic salts are used to crosslink the above listed cross-

linkable polymers (column 3, lines 5-14). Kovacs discloses that the image receiving layer may also optionally contain matting agents and surfactants such as non-ionic, hydrocarbon, cationic, or fluorocarbon surfactants. Shaw-Klein has been discussed above.

Assuming the requisite motivation exists to combine Kovacs and Shaw-Klein as suggested by the Patent Office, the resulting combination would not result in the claimed invention as currently claimed since Applicants do not claim calcium chloride, barium sulfate, or aluminum chloride as disclosed in Shaw-Klein. Thus, the combination of the above references if combined, would not result in the invention as claimed. Accordingly, for at least this reason, Applicants respectfully request that the above rejection of claims 22, 24-29, and 32 be withdrawn.

Claims 22, 24-26, 28, 29, and 32 were rejected under 35 USC § 103(a) as being unpatentable over Wallace in view of Shaw-Klein.

Wallace discloses an ink-receptive coating containing olefin copolymer containing neutralized pendant acid groups and a 2-oxazoline polymer and may contain a hydrophilic latex (acrylic acid/acrylonitrile/styrene terpolymers, anionic surfactant and water) and that spunbonded olefin and metal are not receptive to aqueous inks.

Shaw-Klein discloses an ink recording element having a water-absorbing layer and an image recording layer containing a colloidal oxide and pigment dispersed in an organic binder. Shaw-Klein further discloses that the invention may contain a small amount of calcium chloride, barium sulfate, or aluminum chloride. Shaw-Klein also discloses that non-ionic, hydrocarbon, or fluorocarbon surfactants or cationic surfactants may be used in the ink-receiving layer.

Assuming the requisite motivation exists to combine Wallace and Shaw-Klein as suggested by the Patent Office, the resulting combination would not result in the claimed invention as currently claimed since Applicants do not claim calcium chloride, barium sulfate, or aluminum chloride as disclosed in Shaw-Klein. Thus, the combination of the above references if combined, would not result in the invention as claimed. Accordingly, for at least this reason, Applicants respectfully request that the above rejection of claims 22, 24-26, 28, 29, and 32 be withdrawn.

Claims 30 and 31 were rejected under 35 USC § 103(a) as being unpatentable over Wallace, in view of Shaw-Klein in further view of Hasegawa.

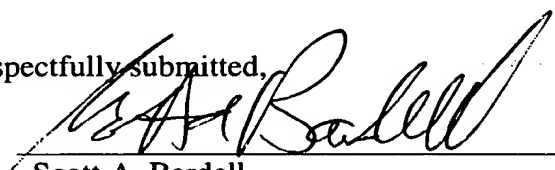
Hasegawa adds nothing substantive to the teachings of either Wallace or Shaw-Klein to cure the defects in them described above. Accordingly, Applicants respectfully request that the above rejection of claims 30 and 31 be withdrawn.

In view of the above amendments and remarks, Applicants respectfully request reconsideration of the claims and submit that the claims are in condition for allowance and request formal notice thereof. Examiner is invited to telephone the undersigned at the number below if Examiner believes that such a call would facilitate prosecution and allowance of the application.

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Respectfully submitted,

By


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Version With Markings to Show Changes

22. (Twice Amended) An ink receiving medium comprising:
a nonwoven macroporous substrate having a fluid management system **comprising a surfactant** and having a pigment management system comprising a water-soluble multivalent metal salt having a metal cation selected from the group consisting of [Ca,] Mg, Ti, Cr, Zr, Fe, Cu, Zn, Ta, Al, Ga, Sn, and combinations thereof in contact with surfaces of macropores of the substrate therein, wherein the nonwoven macroporous substrate comprises fibers selected from the group consisting of cotton, flax, hemp, ramie, burlap, wool, silk, rayon, acrylic, polyolefin, polystyrene and block copolymers thereof with butadiene, polyester, polyamide, polyarylsulfones, poly(vinyl alcohol), poly(ethylene vinyl acetate), polyacrylates, polycarbonates, cellulosic polymers, polyimides, polyurethanes, and combinations thereof.

28. (Amended) The ink receiving medium according to claim [23] **22** wherein the pigment management system further comprises an opacifying pigment.

29. (Amended) The ink receiving medium according to claim [23] **22** wherein said water-soluble multivalent metal salt is aluminum sulfate, aluminum nitrate, gallium nitrate, ferrous sulfate, chromium sulfate, zirconium sulfate, magnesium sulfophthalate, copper sulfophthalate, zirconium sulfophthalate, zirconium phthalate, zinc sulfate, zinc acetate, zinc chloride, [calcium chloride,] calcium bromide, magnesium sulfate, magnesium chloride, aluminum sulfophthalate, aluminum sulfoisophthalate, or combinations thereof.

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